

## VAV TERMINALS

MARK	MAX. AIRFLOW (CFM)	MIN. AIRFLOW (CFM)	UNOCCUPIED AIRFLOW (CFM) (NOTE 3)	TERMINAL TYPE (NOTE 2)	HOT WATER HEATING COIL PERFORMANCE						DESIGN			
					CAPACITY (MBH)	COIL FLOW (GPM)	AIR TEMP. RISE (°F)	WATER PRES. TYPE DROP (FT.)	AIR PRES. DROP (WG)	NUMBER OF ROWS	CODE/STANDARD	SPACE DESCRIPTION	MINIMUM REQUIREMENT	
VAV-1	350	150	A	-	A	7.0	1.0	43	0.5	0.06"	1	ASHRAE 62.1	OFFICE	CFM OA
VAV-2	400	100		-	B	6.9	1.0	64	0.69	0.07"	1	ASHRAE 62.1	OFFICE	CFM OA
VAV-3	1000	500		-	C	17.0	2.0	31.5	0.68	0.18"	1	ASHRAE 62.1	OFFICE	CFM OA
VAV-4	250	250	-	A	8.6	1.0	32	0.5	0.05"	1	ASHRAE 62.1	CORRIDOR	CFM OA	
VAV-5	350	200	100	A	7.7	1.0	35.5	0.5	0.09"	1	2010 FGI	DIAGNOSTIC	2/6 ACH	
VAV-6	150	100	50	A	5.9	1.0	54.5	0.5	0.02"	1	2010 FGI	DIAGNOSTIC	2/6 ACH	
VAV-7	350	200	100	A	7.7	1.0	35.5	0.5	0.09"	1	2010 FGI	DIAGNOSTIC	2/6 ACH	
VAV-8	150	100	50	A	5.9	1.0	54.5	0.5	0.02"	1	2010 FGI	DIAGNOSTIC	2/6 ACH	
VAV-9	350	200	100	A	7.7	1.0	35.5	0.5	0.09"	1	2010 FGI	DIAGNOSTIC	2/6 ACH	
VAV-10	250	100	-	A	5.9	1.0	54.5	0.5	0.02"	1	ASHRAE 62.1	OFFICE	CFM OA	
VAV-11	150	150	-	A	7.0	1.0	42.8	0.5	0.02"	1	2010 FGI	SOILED	2/6 ACH	
VAV-12	450	250	125	B	12.8	1.0	47	0.69	0.09"	1	2010 FGI	DIAGNOSTIC	2/6 ACH	
VAV-13	3000	3000	-	F	88.5	3.0	27	0.5	0.51"	2	2010 FGI	WAITING	2/12 ACH	
VAV-14	300	200	-	A	7.7	1.0	35.5	0.5	0.09"	1	ASHRAE 62.1	OFFICE	CFM OA	
VAV-15	1050	575	-	C	18.1	2.0	28.9	0.68	0.07"	1	ASHRAE 62.1	OFFICE	CFM OA	
VAV-16	500	500	-	B	21.9	1.0	40.5	0.33	0.2"	2	ASHRAE 62.1	OFFICE	CFM OA	
VAV-17	300	200	-	A	7.7	1.0	35.5	0.5	0.09"	1	ASHRAE 62.1	CORRIDOR	CFM OA	
VAV-18	300	200	-	A	7.7	1.0	35.5	0.5	0.09"	1	ASHRAE 62.1	CORRIDOR	CFM OA	
VAV-19	1300	400	200	D	16.0	2.0	37	0.88	0.2"	1	2010 FGI	DIAGNOSTIC	2/6 ACH	
VAV-20	360	360	-	B	11.6	2.0	31.5	2.34	0.07"	1	2010 FGI	DIAGNOSTIC	2/6 ACH	
VAV-21	250	200	-	A	7.7	1.0	35.5	0.5	0.05"	1	2010 FGI	DIAGNOSTIC	2/6 ACH	
VAV-22	500	200	-	B	9.2	1.0	42.5	0.69	0.1"	1	2010 FGI	LAB NUC ME	2/6 ACH	
VAV-23	500	200	100	B	9.2	1.0	42.5	0.69	0.1"	1	2010 FGI	DIAGNOSTIC	2/6 ACH	
VAV-24	500	200	100	B	9.2	1.0	42.5	0.69	0.1"	1	2010 FGI	DIAGNOSTIC	2/6 ACH	
VAV-25	200	100	-	A	5.9	1.0	54.5	0.5	0.03"	1	2010 FGI	DIAGNOSTIC	2/6 ACH	
VAV-26	1200	200	-	C	-	-	-	-	-	-	ASHRAE 62.1	STORAGE	CFM OA	
VAV-27	250	250	A	-	A	8.6	1.0	32	0.5	0.05"	1	2010 FGI	DIAGNOSTIC	2/6 ACH
VAV-28	600	350		175	B	11.4	1.0	30	0.69	0.14"	1	2010 FGI	DIAGNOSTIC	2/6 ACH
VAV-29	100	100		-	A	5.9	1.0	54.1	0.5	0.01"	1	2010 FGI	CLEAN	2/4 ACH
VAV-30	450	250	125	B	12.8	1.0	47	0.69	0.09"	1	2010 FGI	DIAGNOSTIC	2/6 ACH	
VAV-31	450	150	-	B	8.0	1.0	49	0.69	0.02"	1	ASHRAE 62.1	OFFICE	CFM OA	
VAV-32	200	200	-	A	7.7	1.0	35.3	0.5	0.02"	1	2010 FGI	SOILED	2/6 ACH	
VAV-33	200	200	-	A	7.7	1.0	35.3	0.5	0.02"	1	2010 FGI	HOLDING RM	2/6 ACH	
VAV-34	1300	400	200	D	16.0	2.0	37	0.88	0.2"	1	2010 FGI	DIAGNOSTIC	2/6 ACH	

### VAV TERMINAL NOTES:

NOTE 1: BASIS OF SPECIFICATION SHALL BE CAPABLE OF OPERATING WITH A MINIMUM INLET PRESSURE OF 0.5 IN. W.G. PROVIDE WITH SCREW ACCESS (UN-HINGED) WHERE TERMINALS ARE INSTALLED IN THE BEAM/JOIST SPACE.

NOTE 2: REFER TO "VARIABLE AIR VOLUME TERMINALS: CONNECTION SCHEDULE" FOR TERMINAL SIZE, DUCT CONNECTIONS AND DUCT SIZES.

NOTE 3: VAV BOXES WITH UNOCCUPIED AIR FLOW LISTED ARE CONTROLLED BY OCCUPANCY SENSORS.

### GENERAL COMMISSIONING NOTES:

- SEE SPECIFICATION SECTION 019100 GENERAL COMMISSIONING REQUIREMENTS FOR COMMISSIONING SCOPE AND REQUIREMENTS.
- THE MECHANICAL CONTRACTOR, TEMPERATURE CONTROLS CONTRACTOR, AND BALANCING CONTRACTOR WILL WORK WITH THE COMMISSIONING AGENT TO COMPLETE THE PREFUNCTIONAL AND FUNCTIONAL TESTING AND VERIFICATION.
- FULL FUNCTIONAL TESTING (INCLUDING SENSOR CALIBRATION AND AIR/WATER BALANCING) SHALL BE PERFORMED ON ALL VAV BOXES. CX AGENT, TAB CONTRACTOR AND CONTROLS CONTRACTOR WILL WORK TOGETHER DURING FUNCTIONAL TESTING OF VAV BOXES.

## VAV TERMINALS

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				CAPACITY (MBH)	COIL FLOW (GPM)	AIR TEMP. RISE (°F)	WATER PRES. DROP (FT.)	AIR PRES. DROP (WG)	NUMBER OF ROWS	CODE/STANDARD	SPACE DESCRIPTION	MINIMUM REQUIREMENT
VAV-35	300	100	A	9.4	2.0	34	1.7	0.05"	1	ASHRAE 62.1	CORRIDOR	CFM OA
VAV-36	500	100	B	—	—	—	—	—	—	ASHRAE 62.1	STORAGE	CFM OA
VAV-37	225	100	A	8.2	1.0	33	0.5	0.04"	1	ASHRAE 62.1	OFFICE	CFM OA
VAV-38	200	100	A	5.9	1.0	54.1	0.5	0.01"	1	ASHRAE 62.1	OFFICE	CFM OA
VAV-39	200	100	A	5.9	1.0	54.1	0.5	0.01"	1	ASHRAE 62.1	OFFICE	CFM OA
VAV-40	600	350	B	11.5	1.0	30.1	0.69	0.06"	1	ASHRAE 62.1	DRESSING	CFM OA
VAV-41	175	75	A	7.0	1.0	43	0.5	0.02"	1	ASHRAE 62.1	OFFICE	CFM OA
VAV-42	325	50	A	5.9	1.0	54	0.5	0.01"	1	ASHRAE 62.1	OFFICE	CFM OA
VAV-43	125	50	A	5.9	1.0	54	0.5	0.01"	1	ASHRAE 62.1	OFFICE	CFM OA
VAV-44	125	50	A	5.9	1.0	54	0.5	0.01"	1	ASHRAE 62.1	OFFICE	CFM OA
VAV-45	425	200	B	20.1	1.0	46	0.33	0.13"	2	ASHRAE 62.1	OFFICE	CFM OA
VAV-46	125	50	A	5.9	1.0	54	0.5	0.01"	1	ASHRAE 62.1	OFFICE	CFM OA
VAV-47	125	50	A	5.9	1.0	54	0.5	0.01"	1	ASHRAE 62.1	OFFICE	CFM OA
VAV-48	260	75	A	6.4	1.0	47	0.5	0.015"	1	ASHRAE 62.1	OFFICE	CFM OA
VAV-49	260	75	A	7.0	1.0	43	0.5	0.02"	1	ASHRAE 62.1	OFFICE	CFM OA
VAV-50	260	75	A	6.4	1.0	47	0.5	0.015"	1	ASHRAE 62.1	OFFICE	CFM OA
VAV-51	460	150	B	8.0	1.0	49	0.69	0.02"	1	ASHRAE 62.1	OFFICE	CFM OA
VAV-52	225	100	A	5.9	1.0	54	0.5	0.01"	1	ASHRAE 62.1	LOUNGE	CFM OA
VAV-53	260	75	A	6.4	1.0	47	0.5	0.015"	1	ASHRAE 62.1	OFFICE	CFM OA
VAV-54	150	75	A	7.0	1.0	43	0.5	0.02"	1	ASHRAE 62.1	OFFICE	CFM OA
VAV-55	275	100	A	8.2	1.0	33	0.5	0.04"	1	ASHRAE 62.1	OFFICE	CFM OA
VAV-56	475	200	B	20.1	1.0	46	0.33	0.13"	2	ASHRAE 62.1	OFFICE	CFM OA
VAV-57	200	100	A	7.7	1.0	35	0.5	0.03"	1	ASHRAE 62.1	OFFICE	CFM OA
VAV-58	260	75	A	5.9	1.0	54	0.5	0.01"	1	ASHRAE 62.1	OFFICE	CFM OA
VAV-59	260	50	A	5.9	1.0	54	0.5	0.01"	1	ASHRAE 62.1	OFFICE	CFM OA
VAV-60	1100	1100	D	44	3.0	37	1.9	0.23"	2	ASHRAE 62.1	OFFICE	CFM OA
VAV-61	225	100	A	8.2	1.0	33	0.5	0.04"	1	ASHRAE 62.1	OFFICE	CFM OA
VAV-62	500	300	B	29	2.0	38	1.3	0.36"	2	ASHRAE 62.1	OFFICE	CFM OA
VAV-63	125	50	A	5.9	1.0	54	0.5	0.01"	1	ASHRAE 62.1	OFFICE	CFM OA
VAV-64	150	50	A	7.0	1.0	43	0.5	0.02"	1	ASHRAE 62.1	COPY/WORK	CFM OA
VAV-65	250	100	A	9.4	2.0	34	1.7	0.05"	1	ASHRAE 62.1	OFFICE	CFM OA
VAV-66	260	75	A	7.0	1.0	43	0.5	0.02"	1	ASHRAE 62.1	OFFICE	CFM OA
VAV-67	260	75	A	7.0	1.0	43	0.5	0.02"	1	ASHRAE 62.1	OFFICE	CFM OA
VAV-68	260	75	A	7.0	1.0	43	0.5	0.02"	1	ASHRAE 62.1	OFFICE	CFM OA

### VAV TERMINAL NOTES:

NOTE 1: BASIS OF SPECIFICATION SHALL BE CAPABLE OF OPERATING WITH A MINIMUM INLET PRESSURE OF 0.5 IN. W.G. PROVIDE WITH SCREW ACCESS (UN-HINGED) WHERE TERMINALS ARE INSTALLED IN THE BEAM/JOIST SPACE.

NOTE 2: REFER TO "VARIABLE AIR VOLUME TERMINALS: CONNECTION SCHEDULE" FOR TERMINAL SIZE, DUCT CONNECTIONS AND DUCT SIZES.

## VARIABLE AIR VOLUME TERMINALS : CONNECTION SCHEDULE

TERMINAL TYPE	INLET		MAX. AIRFLOW (CFM)	TERMINAL AIR PRESSURE DROP (IN W.G.)	RADIATED NOISE (NC)	DISCHARGE	
	TERMINAL NECK SIZE (IN)	SUPPLY DUCT (IN)				TERMINAL CONN. SIZE (IN)	DISCHARGE DUCT (IN)
A	6"	8"	350	1.0"	25	12x8	10x10
B	8"	10"	700	1.0"	27	12x10	16x12
C	10"	12"	1200	1.0"	28	14x12.5	22x12
D	12"	14" OR 16x10	1600	1.0"	30	16x15	26x12
E	14"	18x12	2400	1.0"	30	20x18	30x12
F	16"	24x12	3200	1.0"	25	24x18	34x14

### NOTES:

- PROVIDE DUCT SIZES AS INDICATED OR EQUIVALENT FREE AREA AS INDICATED ON PLANS.
- PROVIDE FLEXIBLE DUCT CONNECTORS ON SUPPLY DUCTWORK CONNECTION POINT.
- CONTRACTOR SHALL PROVIDE ALL TRANSITIONS/OFFSETS AS NECESSARY.

## EXHAUST FANS

MARK	EF-1
STYLE	UTILITY VENT SET
TYPE	CENT.
PERFORMANCE	
AIR FLOW (CFM)	1,000
STATIC PRESSURE (IN W.G.)	3.5
FAN SPEED (RPM)	2740
NOISE LEVEL (SONES)	20
MOTOR	
TYPE OF DRIVE	BELT
MOTOR SIZE (HP)	3/4
VOLTS-PHASE-HERTZ	480-3-60
ACCESSORIES	
FAN SPEED CONTROL (NOTE 2)	YES
SPRING ISOLATION	YES

### NOTES:

- FAN SHALL BE PROVIDED WITH VARIABLE SPEED DRIVE WITH INTEGRAL LINE SIDE DISCONNECT.

## AIR DISTRIBUTION DEVICE (DIFFUSERS, REGISTERS AND GRILLES)

MARK	TYPE	FACE SIZE (INCHES)	NECK SIZE (INCHES)	STYLE	COLOR	MATERIAL
S1	SUPPLY DIFFUSER	24x24	SEE TAG	LAY-IN	WHITE	ALUMINUM
S2	SUPPLY DIFFUSER	11-1/8"	SEE TAG	SURFACE	WHITE	ALUMINUM
S3	SUPPLY DIFFUSER	50x8	SEE TAG	SURFACE WITH 1" BORDER	WHITE	ALUMINUM
S4	SUPPLY DIFFUSER	22"	SEE TAG	SURFACE	WHITE	ALUMINUM
S5	SUPPLY DIFFUSER	27"	SEE TAG	ROUND SURFACE	WHITE	STEEL
R1	RETURN GRILLE	24x12	SEE TAG	PERFORATED FACE LAY-IN	WHITE	ALUMINUM
R2	RETURN GRILLE	24x24	SEE TAG	PERFORATED FACE LAY-IN	WHITE	ALUMINUM
R3	RETURN GRILLE	50x8	SEE TAG	SURFACE WITH 1" BORDER	WHITE	ALUMINUM
R4	RETURN GRILLE	50x12	SEE TAG	SURFACE WITH 1" BORDER	WHITE	ALUMINUM
R5	RETURN GRILLE	74x10	SEE TAG	SURFACE WITH 1" BORDER	WHITE	ALUMINUM
R6	RETURN GRILLE	14x12	SEE TAG	SURFACE WITH 1" BORDER	WHITE	STEEL
E1	EXHAUST GRILLE	24x12	SEE TAG	PERFORATED FACE LAY-IN	WHITE	ALUMINUM

## AC UNIT (CHILLED WATER)

MARK		AC-1	AC-2	AC-3	AC-4
SPACE SERVED		CT ROOM	CT ROOM	CT CONTROL ROOM	IT ROOM
AIR HANDLER CONFIGURATION		HORIZONTAL	HORIZONTAL	HORIZONTAL	HORIZONTAL
SUPPLY FAN PERFORMANCE					
AIR FLOW	(CFM)	1,250	1,250	1,000	1,000
OUTDOOR AIR	(%)	0	0	0	0
EXTERNAL STATIC PRESSURE	(IN. W.G.)	0.7	0.7	0.3	0.3
MOTOR SIZE	(HP)	1.5	1.5	0.5	0.5
COOLING PERFORMANCE (CHILLED WATER COIL)					
TOTAL COOLING CAPACITY	(MBH)	31.0	31.0	26.0	26.0
SENSIBLE COOLING CAPACITY	(MBH)	27.6	27.6	22.8	22.8
ENTERING AIR TEMP. DB/WB	(DEG. F.)	75/62.5	75/62.5	75/62.5	75/62.5
LEAVING AIR TEMP. DB/WB	(DEG. F.)	53.9/52.2	53.9/52.2	53.9/52.2	53.9/52.2
WATER FLOW/PRESSURE DROP	(GPM/FT. HD)	6.0/10	6.0/10	5.0/7.2	5.0/7.2
EWI/LWT	(DEG. F.)	45.0/55.0	45.0/55.0	45.0/55.0	45.0/55.0
ELECTRIC HUMIDIFIER					
TOTAL CAPACITY	(LB/HR)	4.3	4.3	4.3	4.3
KW		1.5	1.5	1.5	1.5
FILTERS					
TYPE		2" STANDARD	2" STANDARD	4" STANDARD	4" STANDARD
ELECTRICAL DATA - AIR CONDITIONER					
VOLTS-PHASE-HERTZ		460-3-60	460-3-60	460-3-60	460-3-60
FULL LOAD AMPS		5.5	5.5	4.8	4.8
WIRE SIZING AMPS		6.9	6.9	6.0	6.0
MAX. OVERCURRENT PROTECTIVE DEVICE	(AMPS)	15	15	15	15
ACCESSORIES					
MICROPROCESSOR CONTROL WITH WALL MOUNTED DISPLAY		YES	YES	YES	YES
RETURN AIRSIDE SMOKE DETECTOR		NO	NO	NO	NO
MANUFACTURER'S STARTUP		YES	YES	YES	YES
FACTORY DISCONNECT SWITCH		YES	YES	YES	YES
SINGLE FLOAT CONDENSATE PUMP		YES	YES	YES	YES
3-WAY CHILLED WATER MODULATING VALVE		NO	NO	YES	NO
HIGH STATIC BLOWER MODULE		YES	YES	NO	NO
2-WAY CHILLED WATER MODULATING VALVE		YES	YES	NO	YES
BACnet INTERFACE		YES	YES	YES	YES
REMOTE TEMPERATURE & HUMIDITY SENSORS		YES	YES	YES	YES
SUPPLY AIR PLENUM WITH CEILING FASCIA		NO	NO	YES	YES
BASIS OF SPECIFICATIONS					
MANUFACTURER		LIEBERT	LIEBERT	LIEBERT	LIEBERT
AIR CONDITIONER MODEL NUMBER		MMD 40C (MINI-MATE2)	MMD 40C (MINI-MATE2)	MMD 40C (MINI-MATE2)	MMD 40C (MINI-MATE2)